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Father Participation in Child Psychopathology Research

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Abstract

The purpose of the current study was two-fold: (1) To examine time trends of the inclusion of fathers in child psychopathology research from 2005 to 2015; and (2) to examine online crowdsourcing as a method to recruit and study fathers. In study 1, findings indicated that, relative to two earlier reviews of father participation from 1984 – 1991 and 1992 – 2004, there has been limited progress in the inclusion of fathers in child psychopathology research over the last decade. In study 2, without explicit efforts to recruit fathers, almost 40% of a sample of 564 parents recruited from online crowdsourcing (Amazon's Mechanical Turk) were fathers. Major demographic differences did not emerge between mother and father participants and data were equally reliable for mothers and fathers. Fathers were more likely to drop out over the course of a 12-month follow-up but these differences in retention between mothers and fathers were non-significant if fathers were retained at a 2-week follow-up. Finally, family process models tested across four assessments (baseline, 4, 8, and 12 month follow-ups) indicated that data from fathers are equally supportive of convergent validity as data from mothers. We concluded that online crowdsourcing is a promising recruitment methodology to increase father participation in child psychopathology research.

Keywords

fathers; online crowdsourcing; research methodology; child psychopathology

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Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.”

Informed consent: “Informed consent was obtained from all individual participants included in the study.

For many years, researchers who study child psychopathology within the family context have ignored fathers' involvement and parenting (e.g., Phares & Compas, 1992). Furthermore, as Lamb (2010, p. 1) has noted, when fathers have been acknowledged, "it was through the eyes and voices" of mothers, who have been and continue to be the primary caregivers of children (e.g., Milkie, Nomaguchi, & Denny, 2015). As a consequence, it is not surprising that mothers have been "the parent" who participates in research related to their child(ren). However, from both a theoretical perspective and the empirical literature, fathers do make a difference in their children's development and should therefore be considered in related research.

The family systems framework (Cox & Paley, 1997; Minuchin, 1985) posits that family members are interdependent. As such, the behavior of any one individual cannot be understood without consideration of all family members as there are direct, indirect, and reciprocal influences across individuals and subsystems within the family. To ignore an individual who undertakes the role of a father does not consider the range of potential parental influences on the child's development.

The empirical literature supports family systems theory; research consistently shows that father *do* play a considerable role in their child's development. Phares and Compas (1992), for example, conducted a comprehensive review of the literature, concluding that paternal characteristics, primarily involvement with a child, are related to the child's levels of psychopathology. This major finding has been substantiated in subsequent years as both child problem behaviors (internalizing and externalizing) and adaptive behaviors (e.g., academic achievement) have been related to characteristics of a father (e.g., Atwood, Gold, & Taylor, 1989; Flouri, 2010; Lamb, 2010; McLanahan, 1999; Phares, Fields, & Binitie, 2006). Of importance, although there are some differences [e.g., fathers utilize more directives and disciplinary procedures but also engage in more play behavior than mothers (e.g., Lamb, 2010; Nobes, Smith, Upton & Heverin, 1999)], scholars (e.g., Lamb, 2010) have stressed that fathers and mothers appear to interact with their children more in similar than dissimilar ways [e.g., similar, levels of behaviorally coded rejection, coercion, and support (Kaczynski, Lindahl, Lurnceau, & Malik, 2006)].

At the current time, two of the critical questions regarding fathers and child psychopathology are: (1) Do researchers continue to ignore fathers?, and (2) if so, are there innovative ways to increase father participation in research? Regarding the first question, the history of father involvement in research is important to consider. Fortunately, Phares and her colleagues provided the necessary, but not encouraging, background by conducting a comprehensive literature spanning the 1984 through 2004 timeframe (Phares & Compas, 1992; Phares, Fields, Komboukos & Lopez, 2005). Phares and Compas (1992) examined eight prominent journals in clinical and developmental psychology from 1984–1991 for father inclusion in studies. Only 1% of the 577 studies reviewed included only fathers; only 24% of the studies included both mothers *and* fathers and analyzed them separately so that father associations with child psychopathology could be examined. In contrast, 48% of studies included mothers only, and 26% included some fathers but did not analyze mothers and fathers separately. Taken together, the role of fathers in child psychopathology could be ascertained in only one-fourth of the studies (Phares & Compas, 1992). Unfortunately, a

subsequent review of studies in the same eight journals from 1992–2004 indicated that father association with child psychopathology could be examined in only 30% of the studies (i.e., fathers only = 2%; mothers and fathers analyzed separately = 28%), leading the authors to conclude that the inclusion of fathers in child psychopathology research had not changed since the initial 1992 investigation (Phares et al., 2005). Whether child psychopathology researchers have heeded calls to study fathers (e.g., Phares et al.) since 2004 is an unanswered question, which will be addressed in the current study.

If fathers' representation in psychological research continues to be limited, a second question emerges: Is there an innovative way to increase participation of fathers in research related to child development? This question may partially be addressed by determining *why* fathers are currently not represented in empirical investigations. The conceptual framework outlined by Doherty, Kouneski, and Erickson (1998) for why responsible fathering does or does not occur can help shed light on this question. Doherty and colleagues proposed that fathering, relative to mothering, is contextually sensitive to many factors, such as the coparent relationship, maternal expectations, and employment, which influence how much fathers are involved in the upbringing of their children. We would extend this idea by advocating that father *participation in research* on child psychopathology is also contextually sensitive. Among researcher-initiated contextual factors that have been proposed to potentially promote father participation are flexibility in scheduling, valuing father participation, and securing direct avenues to solicitation of father involvement. Among mother-initiated contextual factors that could promote father participation is a reduction in the gatekeeping role that mothers can play. Finally, there is a larger societal context of gender norms surrounding caregiving: as we have noted, fathers traditionally have not engaged in childcare as much as mothers (Milkie et al., 2015).

With regards to scheduling flexibility, fathers are more likely than mothers to work full time jobs (Catalyst, 2015) and research is often unable to accommodate the more restrictive work schedules of fathers (Addis & Mahalik, 2003; Bureau of Labor Statistics, 2015; Mitchell et al., 2007). Because full-time working men often lack flexibility for appointment scheduling, they would have to participate in studies that do not affect their availability for work; however, this may involve extra childcare costs or cause disruption to other family members (MacFadyen, Swallow, Santacroce, & Lambert, 2011; Phares, Rojas, Thurston, & Hankinson, 2010). Such work-related barriers reduce the availability of fathers for research participation (Bögels & Phares, 2008). To circumvent these obstacles, researchers would have to be flexible in scheduling or utilize a methodology that allows flexible participation in order to increase father participation. However, it is important to note the percentage of mothers in the work force has increased substantially over the past 30 years (Catalyst, 2015). Thus, work schedule alone may not be the only contextual factor that prevents father participation in child psychopathology research.

A second factor deserving attention is the proposal by Lundahl, Tollefson, Risser, and Lovejoy (2008) that fathers may not be encouraged to participate in research (e.g., only mothers are recruited). If so, fathers may not feel that they are valued in the research process (Bögels & Phares, 2008; Macfadyen et al., 2011) and, in reality, they may not be. In addition, researchers may have assumed that fathers are unwilling to participate, and, as a

result, focused their recruitment on mothers (Sherr, Davé, Lucas, Senior, & Nazareth, 2006). There are various reasons (e.g., beliefs about gender norms regarding caregiving, marital conflict) why mothers then may serve a gatekeeping role that prevents father participation (e.g., Costigan & Cox, 2001). Direct solicitation of fathers through media that capture their interest and attention may communicate that their participation is valued and increase their involvement in child psychopathology research. [See Fabiano et al. (2009) for an excellent example of a research study which specifically recruited fathers and tailored an intervention to them, resulting in increased attendance and study completion.]

The Present Research

Given the challenges in recruiting fathers for child psychopathology research and a lack of progress from 1984–1991 to 1992–2004, the purpose of the current investigation was twofold. A first aim was to provide an update on the participation of fathers in child psychopathology research during the last decade (2005–2015). A second goal was to introduce and evaluate an alternative method for increasing father participation in child psychopathology research: online crowdsourcing. This method may enhance paternal involvement by increasing flexibility of participation times, appealing to their technology interests, and directly soliciting father participation in child psychopathology research. As a consequence, online research may communicate to fathers that they are valued in the research process, further increasing participation (and even eventually perhaps leading to some change in gender norms about childrearing). Findings will provide a test of the viability of this novel method for recruiting fathers for longitudinal child psychopathology research. In this context, we examined in Study 2 whether demographic characteristics, reliability of measures, retention across assessments, and validity of the data generated were similar for fathers and mothers.

Study 1: 2005 – 2015 Review

Methods

A search was conducted to identify studies of developmental psychopathology published since 2004. To assess whether there were any changes since the time of the Phares et al. reviews (Phares & Compas, 1992; Phares et al., 2005), we examined the same eight journals reviewed by Phares and colleagues: *Child Development*, *Developmental Psychology*, *Journal of Abnormal Child Psychology*, *Journal of Abnormal Psychology*, *Journal of the American Academy of Child & Adolescent Psychiatry*, *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *Journal of Clinical Child and Adolescent Psychology*, and *Journal of Consulting and Clinical Psychology*. These journals were examined from January 2005 through December 2015.

For continuity, the same inclusion criteria devised by the Phares' reviews were applied to the current study: (1) The research was empirical (i.e., not a review article, not a theoretical discussion, and not a case study); (2) the research investigated issues related to child or parental psychopathology (or, a combination of both), and did not focus solely on normal developmental issues; and (3) the study had to analyze some characteristic of the parents, although characteristics could have been assessed through a variety of mechanisms,

including parent report, child report, record review, or direct observation (Phares & Compas, 1992). Similar to the early two reviews, to maintain the focus on developmental psychopathology and clinical child issues, we did not include studies that were health related (e.g., pediatric, medical issues) or that dealt solely with limited intellectual functioning (e.g., working with the functioning of developmentally delayed populations). The second author examined articles to determine which met inclusion criteria. Any questions about the inclusion or exclusion of studies were resolved in consultation with the first author.

Results

A total of 1,048 studies published from 2005 – 2015 was found to fit inclusion criteria. These studies were reviewed to determine type of parental involvement in the research. The categories of parental involvement used were taken from the original reviews (Phares & Compas, 1992; Phares et al., 2005). Of the 1,048 studies, 402 studies (38.36%) involved mothers only; 249 (23.76%) involved both mothers and fathers and analyzed for maternal and paternal effects separately; 389 (37.12%) included both fathers and mothers but did not analyze them separately or, more frequently, reported the involvement of “parents” without specification of parental gender; and 8 (0.76%) involved fathers only.

Two chi-square analyses were conducted, comparing the 2005 – 2015 distribution to the original 1984 – 1991 study period (Phares & Compas, 1992) and to the 1992 – 2004 study period (Phares et al., 2005). An additional chi-square analysis was conducted to compare the 1984–1991 (Phares & Compas, 1992; Phares, 1992) data to the 1992–2004 (Phares et al., 2005) data.

The distribution of study types (Mothers only, Fathers only, Mothers and Fathers Combined, and Mothers and Fathers Separate) did not significantly change between the 1984 – 1991 study period and the 1992 – 2004 study period, $\chi^2(3) = 3.14, p = .37$. The distribution of study types did change significantly between the 1984 – 1991 study period and the 2005 – 2015 study period, $\chi^2(3) = 29.99, p < .01$, Cramer’s phi = 0.13, and between the 1992 – 2004 and 2005 – 2015 periods, $\chi^2(3) = 17.20, p = .01$, Cramer’s phi = 0.11. Inspection of the distributions suggests that the proportion of studies focusing on fathers only has remained approximately constant (about 1%) since 1984, as has the proportion of studies analyzing the effects of mothers and fathers separately (about 25%). The proportion of studies examining mothers only has decreased from 48% to 45% to 38%, while the proportion of studies combining mothers and fathers, without specifying gender in the analyses, increased from 24% to 28% to 37% across the three periods examined. See Figure 1 for a depiction of the proportion of studies in each category since 1984.

Discussion

The findings suggest limited progress in the inclusion of fathers in child psychopathology research. Unfortunately, however, the noted increase has occurred only for studies that did not analyze for fathers and mothers effects separately. Typically in these studies mothers and fathers were examined without specification of parental gender. Importantly, father only studies and investigations analyzing mothers and fathers separately have not increased during the 2005–2015 time period relative to the two preceding decades. However, as noted

above, the increase in studies that included fathers but did not meaningfully incorporate parent gender into analyses does suggest some limited progress is occurring in father inclusion. While opening enrollment of fathers is encouraging, recruiting sufficient numbers of fathers and meaningfully incorporating parent gender into models is necessary to advance our understanding of the role of fathers in child psychopathology. As a result, we introduce and examine a novel method of recruiting fathers—that is, online crowdsourcing research—in Study 2. Our examination of online crowdsourcing included both recruitment and retention of fathers, reliability and validity of data for fathers, and comparison to similarly recruited mothers.

Study 2: Amazon's Mechanical Turk

Amazon's Mechanical Turk (MTurk) is the dominant online crowdsourced recruitment mechanism currently used in social sciences as it can recruit large samples at relatively low cost (Shapiro, Chandler, & Mueller, 2013). On MTurk, workers browse or search for tasks (known as Human Intelligence Tasks, or HITs) by title, keyword, reward, availability or other criteria, and then complete HITs of interest. Once participants have completed a given task, they are compensated by the requesters (for a comprehensive review of MTurk, see Chandler & Shapiro, 2016).

There are several advantages for the use of MTurk that lend themselves to child psychopathology researchers. Data can be collected quickly (e.g., Buhrmester, Kwang, & Gosling, 2011; Paolacci & Chandler, 2014) and at a minimal cost (Horton & Chilton, 2010). Further, evidence suggests that neither speed of collection nor compensation amount have an effect on data quality (Buhrmester et al., 2011; Shapiro et al., 2013). In addition, a diverse range of participants (e.g., race, SES, household composition) can be recruited from across the US (e.g., Paolacci & Chandler, 2014; Paolacci, Chandler, & Ipeirotis, 2010). In fact, MTurk participants are slightly more demographically diverse than are standard Internet samples and are significantly more diverse than samples recruited near college campuses (e.g., Buhrmester et al., 2011; Casler, Bickel, & Hackett, 2013). Although MTurk samples are not perfectly representative of the U.S. population at large (see Chandler & Shapiro, 2016, for an extensive review), discrepancies are increasingly well understood in a way that is not typical or feasible with other nonprobability samples.

Data obtained via MTurk are at least as reliable and valid as those obtained via traditional methods (for a discussion of the reliability and validity of MTurk-based self-report measures, see Buhrmester et al., 2011 and Shapiro et al., 2013; for a discussion of clinical comparisons of an MTurk and general population sample, see Shapiro et al., 2013). One of the most attractive features of MTurk is the size of the sample it offers. MTurk has attracted a large number of users (500,000 registered users and estimates of 15,000 individual U.S. users at any given time; Stewart et al., 2015) and also provides better-quality data in less time than do other extant means of recruiting convenience samples (e.g., advertisements on Facebook; for a comprehensive comparison of online convenience sample recruitment strategies, see Shao et al. 2015). Further, survey completers are virtually anonymous to requesters and complete surveys in an unsupervised environment, which protects respondent anonymity and therefore increases response rates (O'Neil & Penrod, 2001). Though

anonymous, MTurk random IDs are visible to researchers, making it possible to prevent any individual user from participating in the same study more than once.

Finally, of primary interest to the current study, initial child and family research using MTurk has suggested, but not systematically examined, a relatively high representation of fathers (Parent, McKee, Rough et al., 2016; Schleider & Weisz, 2015). Thus, the aim of Study 2 was to recruit participants using MTurk for a study on parenting (without specifying parent gender) in order to answer the following questions: (1) Can MTurk be used to recruit fathers using a low intensity effort (i.e., not directly soliciting fathers)?; (2) Are demographics of fathers and mothers similar?; (3) Are data obtained from fathers as reliable as those obtained by mothers?; (4) Can fathers be retained equally well as mothers in longitudinal research?; and (5) Are data obtained from fathers on MTurk equally supportive of convergent validity as data from mothers?

To examine the fifth question, we conducted longitudinal analyses to test the model in Figure 2a. This model was chosen because of theory to support the individual and interdependent links [e.g., family systems (Cox & Paley, 1997), the spillover hypothesis (Krishnakumar & Buehler, 2000), and the coercion hypothesis (Patterson, 1982)], as well as empirical work to support each link (see below), and relevance to clinical, developmental, and family researchers. The model examined the circular process by which child behavior problems elicit higher levels of coparenting conflict (e.g., Cook, Schoppe-Sullivan, Buckley, & Davis, 2009; Schermerhorn, Cummings, DeCarlo, & Davies, 2007) which, in turn, can spillover into hostile (i.e., negative) parenting practices (e.g., Benson et al., 2008; Kaczynski, et al., 2006). Hostile parenting practices then negatively influence child behavior problems (e.g., Dishion & Patterson, 2006; Wood et al., 2003), restarting the circular process. The links in this model have strong support in the literature, primarily with mothers (e.g., Benson, Buehler, & Gerard, 2008; Dishion & Patterson, 2006; Schermerhorn, Cummings, DeCarlo, & Davies, 2007; Wood, McLeod, Sigman, Hwang, & Chu, 2003). Our test of convergent validity was whether the model would be supported with mothers and fathers similarly to the existing literature.

Method

Procedure—Parents (without specifying gender of the caregiver) were recruited online through MTurk as part of a larger study on the assessment of parenting. The recruitment advertisement stated: “Research on Parenting and Child Well-Being over the Course of 12 Months.” All study procedures were approved by the Institutional Review Board at a northeast university. All parents were consented online before beginning the survey in accordance with the approved IRB procedures. For the current study, a task was listed on MTurk for a study involving the completion of five surveys (baseline, 2-week, 4-month, 8-month, and 12-month follow-ups) over the course of 12 months. Based on recommendations for fair payment suggesting a pay rate of 10 cents per minute (“Fair Payment”, 2016), participants were compensated \$4.00 for participation in a baseline survey (stage 3), \$1.00 for a 2-week follow-up survey, \$4.00 for a 4-month follow-up, \$4.00 for an 8-month follow-up, and \$8.00 for a 12 month follow-up (\$4.00 plus an additional \$4.00 for completing the final follow-up).

Participants were recruited from MTurk under the restriction that they were U.S. residents, had at least a 95% task approval rate for their previous tasks, had completed at least 1,000 previous HITs, and had a child in one of three age ranges: 3–7, 8–12, and 13–17 (this criteria was focal to the larger study but not for the purposes of the current study). For families with multiple children in the target age range, one child was randomly selected through a computer algorithm and survey questions were phrased in reference to the identified child. Importantly, only one mother or father from a family could participate - that is, all mother and father data points are independent.

For follow-up surveys, participants were contacted via email using their MTurk ID. One email was sent the day prior to the survey being available, one email was sent the day the survey became available, and two emails were sent after that day if the parent had not yet completed the follow-up survey.

10 attention check items were placed throughout the online survey. These questions asked participants to enter a specific response such as “Please select the Almost Never response option” that changed throughout the survey appearing in random order within other survey items. Participants ($n = 2$) were not included in the study (i.e., their data removed from the dataset) if they had more than one incorrect response to these 10 check items. This ensured that responses were not random or automated. The follow-up surveys allowed for demographic characteristics to be measured again when participants were re-contacted and for inconsistent responders to be excluded from analyses. Thus, the current study excluded inconsistent responders from analysis based on not reporting the same child demographic characteristics across the assessed waves. We allowed for one-time potential mistakes, such as incorrect gender or entering the date-of-birth wrong at a single time-point but excluded participants who made such mistakes at more than one wave ($n = 51$). Although this represents a strict criterion for inclusion, it was deemed necessary given that in-person laboratory visits were not possible.

Measures

Demographic information: Parents responded to demographic questions about themselves (e.g., parental age, education), their families (e.g., household income), and the target child (e.g., gender, age).

Child internalizing and externalizing problems: The parent form of the 19-item Brief Problem Monitor (BPM; Achenbach, McConaughy, Ivanova, & Rescorla, 2011) was used in the current study to measure youth internalizing and externalizing problems. In a study by Chorpita et al. (2010), the BPM internalizing and externalizing items were selected from the Child Behavior Checklist/6–18 and Youth Self Report (Achenbach & Rescorla, 2001) using item response theory and factor analysis. The internal consistency ($\alpha = .80 - .92$) and test–retest ($r = .76 - .85$) reliability of the BPM are excellent (Achenbach et al., 2011; Chorpita et al., 2010). Furthermore, validity tests showed large and significant correlations with corresponding scales of the CBCL and YSR ($r = .50 - .62$) as well as with diagnoses obtained from a structured diagnostic interview and distinguishing between referred and nonreferred children (see Achenbach et al., 2011; Chorpita et al., 2010, for complete

details). Each item is rated on a 0 to 2 scale (0 = *not true*, 1 = *somewhat true*, or 2 = *very true*).

Coparenting conflict: The Exposure to Conflict subscale of the Coparenting Relationship Scale (CRS; Feinberg, Brown, & Kan, 2012) assessed coparenting conflict. The CRS has shown strong reliability ($\alpha = .81 - .90$) and construct validity (e.g., Feinberg et al., 2012; McDaniel & Douglas, 2012). The 5-item Exposure to Conflict subscale assessed the extent to which the target child is exposed to conflict between parent and coparent within a typical week (1 = *Never*, 7 = *Very often*). In the current study, item content was adjusted from referring to a romantic partner to referring to a coparent to allow the measure to be applicable to parents who did not identify a romantic partner as the primary coparent. A coparent was defined as another adult (relative or non-relative, family member or not) who is integrally involved in sharing and coordinating daily childrearing activities for the target child.

Parenting practices: The Hostility subscale of the Multidimensional Assessment of Parenting Scale (MAPS; Parent & Forehand, 2016) was used for the current study to assess negative parenting practices. MAPS items were selected and adapted from several well-established parenting scales [e.g., The Alabama Parenting Questionnaire (APQ; Frick, 1991), the Parenting Practices Questionnaire (PPQ; Robinson, Mandelco, Olsen, & Hart, 1995), the Parenting Scale (PS; Arnold, O'Leary, Wolff, & Acker, 1993), and the Parent Behavior Inventory (PBI; Lovejoy, Weis, O'Hare, & Rubin, 1999)]. The 7-item Hostility subscale included items representing reactive (e.g., "I lose my temper when my child doesn't do something I ask him/her to do") or intrusive parenting (e.g., "When I am upset or under stress, I am picky and on my child's back"), coercive disciplinary tactics (e.g., "I yell or shout when my child misbehaves"), ineffective discipline (e.g., "I use threats as punishment with little or no justification"), and high levels of expressed hostility (e.g., "I explode in anger toward my child"). Items are rated on a 5-point Likert scale (1 = *Never* to 5 = *Always*). The initial reliability ($\alpha = .77 - .91$, test-retest reliability range of $r = .81 - .91$) and validity (e.g., associations with child psychopathology) data for this measure are promising (Parent, McKee, & Forehand, 2016; Parent, McKee, Rough, & Forehand, 2016).

Data analytic plan—To examine the first aim (Can MTurk be used to recruit fathers?), the percent of mothers and fathers who completed online measures at the baseline assessment was calculated. For the second aim (Are demographics similar for fathers and mothers?), fathers were compared to mothers on a number of demographic variables. For the third aim (Are the data obtained from fathers as reliable as those obtained from mothers?), coefficient omega with confidence intervals, a preferable index of internal consistency over alpha (e.g., less risk of overestimation or underestimation of reliability, more realistic assumptions; see Dunn, Baguley, & Brunson, 2014, for a review), was calculated for all measures separately for mothers and fathers and compared. For the fourth aim (Can fathers be retained equally well as mothers in longitudinal research?), separate retention rates for mothers and fathers were calculated and compared.

Lastly, for the fifth aim (Are data from fathers equally supportive of convergent validity as data from mothers?), we examined convergent validity by testing a longitudinal process

model (see Figure 2a) with fathers to examine if similar links emerged with mothers in the current study. Multiple-group path analysis was conducted with Mplus 7.2 software (Muthén & Muthén, 2012). First, paths were freely estimated by parent gender. Next, paths were fixed to be equal across mothers and fathers to examine if the strength of the association between child problem behavior and coparenting relationship quality significantly differed by parent gender. For the proposed path model, a subset of the total sample that endorsed the assistance of a coparent ($n = 449$, 40% fathers) was used to examine if family processes from (a) child behavior to (b) coparent conflict to (c) negative parenting to (d) child behavior unfolded similarly over time for fathers and mothers. The model was examined separately for externalizing and internalizing problems. Maximum likelihood estimation was used to account for missing data. The following fit statistics were employed to evaluate model fit: Chi-square (χ^2 : $p > .05$ excellent), Comparative Fit Index (CFI; $> .90$ acceptable, $> .95$ excellent), Root Mean Square Error of Approximation (RMSEA; $< .08$ acceptable, $< .05$ excellent), and the Standardized Root Mean Square Residual (SRMR; $< .08$ acceptable, $< .05$ excellent); (Hu & Bentler, 1999). The mechanism of missingness was treated as ignorable (missing at random) and full information maximum likelihood estimation techniques were used for inclusion of all available data.

Results

Recruitment—A total of 564 participants were recruited in approximately 48 hours. Of these, 39.4% ($n=221$) were fathers.

Demographics—The demographic characteristics of the mothers and fathers are presented in Table 1. Overall, parents were on average 36.35 years old ($SD = 8.13$). Participants were predominately White (85.0%), with an additional 10% who identified as Black, 4% as Asian, and 1% as Native American, Alaska Native, or other Pacific Islander. These race percentages approximated those in the U.S. population in 2014: White (78%), Black (13%), Asian (5%), and Native American, Alaska Native, or other Pacific Islander (2%), and mixed (2%) (Colby & Ortman, 2015). However, the sample was underrepresented by Hispanics/Latino/a (6% vs. 17%). Parents' education level ranged from not completing high school (H.S.) or the H.S. equivalent (.4%), obtaining a H.S. degree or GED (12.8%), attending some college (30.5%), earning a college degree (40.6%), and attending at least some graduate school (15.9%). Comparison to one national representative sample suggests that our sample had a higher percentage completing high school and college (Rowatt LaBouff, Johnson, Froese, & Tsang, 2009). A majority of parents were employed full-time (61.7%) with 19.5% reporting employment at a part-time level, and 18.8% reporting unemployment. Reported family income was 21.7% for less than \$30,000 per year, 28.7% between \$30,000 and \$50,000, 19.5% between \$50,000 and \$70,000, 16.8% between \$70,000 and \$100,000, and 13.3% at least \$100,000. Parent marital status was organized into three categories with 17.1% reporting being single, 64.6% being married, and 18.3% being in a cohabiting relationship. Most parents identified a coparent who lived in the home (92%) and was a biological or stepparent (95.3%). Other coparents included grandparents (2.4%), aunts or uncles (1.3%), and female (.7%) or male (.2%) family friends. Approximately half of youth were boys (54.4%) with 38.5% being an only child. Sixteen percent of the youth had

borderline or clinically significant problem behaviors in either internalizing or externalizing domains based on parent report.

Mothers and fathers differed significantly on six (race, education, employment status, neighborhood, number of children in the family, and gender of child for whom measures were completed) of nine demographic variables (See Table 1). Of most note, a larger percentage of fathers than mothers worked full-time and fathers completed assessments on male children more than mothers (though the latter is expected to be random given that choice of the target child was randomized in the event of multiple children). There also were some racial differences with a higher percentage of fathers than mothers being Latino/a and Asian and a higher percentage of mothers being White or Black. Mothers reported more children in the family than did fathers and educational differences emerged but a consistent pattern was not evident.

Reliability—Table 2 presents omega reliability coefficients at the first assessment for the four measures used in the validity test. Interpretation of omega coefficient is similar to alpha (i.e., .70 and higher is acceptable, .80 and higher is good) (see Dunn et al., 2014, for a review). Reliability was .79 and above for all measures reported by both mothers and fathers and the largest difference was less than .05 (.88 vs. .92). Overlapping 95% bootstrapped omega coefficient confidence intervals suggest equivalent reliability across parent gender. It is also of note that mothers and fathers reported mean levels on three of four variables that did not differ significantly. Mothers did report slightly higher levels of negative parenting practices, 10.74 vs. 10.05, $p < .05$ (see table 2).

Retention—Retention rates for mothers were 84.3%, 71.1%, 64.4%, and 71.4% at 2-week, 4-month, 8-month, and 12-month, respectively. Retention rates for fathers were 75.1%, 62.4%, 54.8%, and 57.9% at 2-week, 4-month, 8-month, and 12-month, respectively. Retention rates were significantly higher for mothers compared to fathers at every time point, $p < .05$. Interestingly, if the 2-week follow-up is taken as the starting point (i.e., only participants retained at the 2-week follow-up are examined), the differences in retention between fathers and mothers were no longer significant at 4 (father = 80.7%; mother = 80.3%), 8 (father = 70.5%; mother = 72.7%), or 12-month (father = 74.1%; mother = 79.9%) assessments, $p > .10$.

Validity—A longitudinal model consisting of four time-points (baseline, 4, 8, and 12 months) was used to examine if data reported by fathers yielded similar findings to those reported by mothers in this study and in the existing literature. For validity analyses, only parents who identified a coparent were included ($n = 449$).

The model was first examined with child externalizing problems as the bookends of the model followed by child internalizing problems. The proposed child externalizing problems model demonstrated excellent fit, $\chi^2(12) = 14.06$, $p = .30$, RMSEA = .028, 95% CI [.000, .076], CFI = .997, SRMR = .028, as did the proposed child internalizing problems model, $\chi^2(12) = 20.45$, $p = .06$, RMSEA = .056, 95% CI [.000, .096], CFI = .987, SRMR = .033. The standardized coefficients are displayed for mothers and fathers in Figures 2b (externalizing problems) and 2c (internalizing problems).

For both mothers and fathers, higher levels of coparenting conflict at 4-months predicted higher levels of hostile parenting at 8-months which in turn predicted higher levels of child internalizing and externalizing problems at 12-months. Interestingly, however, the effect of child problem behavior at baseline on coparenting conflict at 4 months differed by parent gender. For fathers, but not mothers, higher levels of child externalizing problems at baseline predicted higher levels of coparenting conflict at 4-months. For mothers, but not fathers, higher levels of child internalizing problems at baseline predicted higher levels of coparenting conflict at 4-months.

Lastly, paths were fixed to be equal across mothers and fathers to examine if the strength of the association between child problem behavior and coparenting relationship quality significantly differed by parent gender. Fixing the path between child externalizing problems and coparenting relationship quality to be equal across mothers and fathers resulted in a significant deterioration of model fit, $\chi^2(1) = 8.95, p < .05$, supporting differential associations by parent gender. Fixing the path between child internalizing problems and coparenting relationship quality to be equal across mothers and fathers did not result in a significant deterioration of model fit, $\chi^2(1) = .08, p > .10$, not supporting differential associations by parent gender. All other paths in the model were equivalent (i.e., all other nested model comparisons resulted in a non-significant χ^2 difference).

Discussion

The current study evaluated the utility of MTurk as a tool for recruiting fathers for longitudinal studies on child psychopathology. Furthermore, we examined whether samples of mothers and fathers had similar demographic characteristics, produced comparable reliability and validity of data, and had similar retention rates across one year. Although fathers and mothers differed in some areas, the results suggest that MTurk may be a viable tool for involving fathers in child psychopathology research.

Almost 40% of the recruited sample consisted of fathers, which is substantial and sufficiently large for conducting analyses separately by gender. The percentage of fathers is still below that of mothers; however, if father participation had been explicitly solicited, the percentage of fathers may have been higher. Even without direct father recruitment, our findings suggest that MTurk is a methodology that could increase father involvement in child psychopathology research.

The demographic characteristics of mothers and fathers differed on five of the nine variables. Several of these do not appear to be particularly meaningful. Importantly there was no systematic difference across education levels. As an illustration, the percentages were nearly identical when those with a college degree or more were combined (mothers = 56% vs. fathers = 58%). Although there were differences in number of children, these findings most likely were random. However, other differences appear more meaningful. Of perhaps most importance, fathers were more likely to work full-time (80% vs. 50%). This finding supports the use of MTurk in recruiting these difficult-to-enroll men. Interestingly, a larger percentage of Latino and Asian men than women participated whereas a larger percentage of Black women than men participated. The reasons for these differences are not

immediately clear but call for replication. However, it is important to note that at least small percentages of fathers from diverse racial/ethnic backgrounds can be recruited with MTurk.

Fathers provided largely high-quality data (e.g., internal consistency) comparable to that provided by mothers. In contrast, retention rates for father was not as high as for mothers. However, the differences dissipated if the 2-week assessment, rather than the baseline assessment, was used as the starting point. This pattern suggests that fathers are more likely than mothers to drop out early in longitudinal research. A potential remedy for father attrition would be to use a time delayed screener on MTurk in which participants complete a basic screener and are re-contacted two weeks later to participate. This methodological approach has the potential to eliminate attrition bias and increase 12-month follow-up retention rates for male participants.

The findings in our path model provide some support for the validity of the MTurk measures completed by fathers. That is, coparenting conflict led to increases in negative parenting which, in turn, led to increases in child problem behavior, findings congruent with the links among family variables found in the existing literature (e.g., Benson et al., 2008; Dishion & Patterson, 2006) and with mothers in the current study. In addition, similar to mothers, our data suggested that child problem behaviors led to an increase in father-reported coparenting conflict – a finding that also aligns with previous longitudinal research (e.g., Cook et al., 2009; Jenkins, Simpson, Dunn, Rasbash, & O'Connor, 2005; Schermerhorn, Cummings, DeCarlo, & Davies, 2007). As our findings for fathers generally map onto those in the literature and with mothers in the current study, they provide evidence suggesting MTurk is an appropriate methodology for examining fathers within the family context.

However, it is important to note that which child behaviors predicted change in coparenting conflict depended on parent gender in the current study. Whereas child externalizing problems predicted change for fathers, child internalizing problems predicted change for mothers. Some of these findings are congruent with prior research (O'Connor & Insabella, 1999) and suggest that some differences may exist between the roles of mothers and fathers in child psychopathology. Nested model comparisons supported differential associations between child externalizing and coparenting by parent gender, but these same analyses did not support differential associations for child internalizing. For child internalizing, these results suggest that although the link with coparenting is significant for mothers but not fathers that the direction and strength of this association are similar for mothers and fathers. Taken together, we view the findings discussed herein as preliminarily supporting the validity of father-reported data.

Several points regarding our data collection through MTurk are important to note. First, and given that the primary purpose of the study was not to solely recruit fathers, we did not specifically recruit fathers but rather used the general term “parents.” Encouragingly, almost 40% of the recruited sample consisted of fathers. If father participation is the goal of research, explicitly soliciting fathers or at least encouraging their participation may lead to even higher rates. However, what is unknown is whether this would change the demographics or retention of the sample or the reliability or validity of the data. Second, even with the flexibility offered by MTurk and the ability to directly solicit or encourage

father participation, our societal masculine gender role beliefs and expectations may hinder fathers from participating and completing measures about their perceptions of family members and interpersonal relationships within the family (Addis & Mahalik, 2003). Third, our use of MTurk restricted the data collected to a single informant using only self-report. Future research could begin addressing this issue in several ways using MTurk plus other technological advances not requiring face-to-face contact with research participants. These include surveying multiple family members (e.g., mothers, fathers, adolescents) independently to provide online data, using webcams to collect observational data, and collecting physiological data through smartphones and other wearable technology. Fourth, 16% of children were reported to have clinically significant internalizing or externalizing problems, and the sample was not representative in terms of Hispanic inclusion or, not surprisingly, lower educated individuals. This suggests that our findings and their implications may be restricted by our sample. Future research recruiting parents through MTurk could have an inclusion criterion of elevation on child problem behaviors if the study of youth with more advanced psychopathology is the goal. Furthermore, encouraging participation, perhaps by increasing incentives, of underrepresented groups will be important.

Conclusions

Disciplines such as philosophy and the law are increasingly recognizing the changing and complex role of fatherhood (Dolgin, 2014; Huben, 2014). Roy (2014) recently has called upon social and behavioral scientists to follow suit. Although the current study takes a different vantage point than proposed by Roy, we believe the findings in Study 1 indicate that our discipline has not followed suit over the past 30 years. Until fathers are included in sufficient numbers in studies of child psychopathology, our knowledge of fatherhood and its role will continue to be limited.

In Study 2, we provide some evidence that MTurk represents a methodology that could potentially increase father participation and, with the use of a 2-week screener, retain fathers in longitudinal research. Furthermore, MTurk can generate data from fathers that are as reliable as data generated by mothers with the same methodology. Finally, our sample model of how family processes unfold over time suggests that processes are similar, but not identical, for fathers and mothers. This provides some convergent, but also some divergent, validity and supports the importance of father participation in child psychopathology research. Findings from the current study, as well as work beginning to emerge from other researchers (Schleider & Weisz, 2015), show promising support for the use of MTurk as a recruitment method for child and family research. Although MTurk is in its infancy, it holds promise as a methodology as it can assist in the collection of complex (e.g., observational and physiological data using modern technological advances) and multi-informant data (e.g., coparents, teachers, and adolescents). Recognizing these various merits, the scientific community should consider using Mturk to further what is known about the role of fathers in child development.

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Figure 1.
The percent of studies examining the involvement of fathers over period of analysis.

Figure 2.**a.** Proposed Path Model.**b.** Path model of the spillover across family systems for child externalizing problems.**c.** Path model of the spillover across family systems for child internalizing problems.Note: M = Mother, F = Father; * = $p < .05$, ** = $p < .01$, *** = $p < .001$

Table 1

Sample demographic characteristics by parent gender.

	M (S.D.) or Percentage		
	Mothers <i>n</i> = 343	Fathers <i>n</i> = 221	Significant Difference
Parent Age	36.3 (8.1)	36.5 (8.2)	No
Parent Race/Ethnicity			Yes
White	80.3	76.9	
Black	11.8	6.8	
Latino/a	3.8	8.6	
Asian	2.9	6.8	
Other	1.2	.9	
Parent Marital Status			No
Single	17.4	16.8	
Married	66.2	62.3	
Cohabiting	16.5	20.9	
Parent Education			Yes
Did not complete H.S.	0	.9	
H.S. or GED	11.4	14.9	
Some College	32.9	26.7	
College Degree	42.6	37.6	
> College Degree	13.2	19.9	
Parent Employment Status			Yes
Full-time	49.9	80.1	
Part-time	24.5	11.8	
Unemployed	25.7	8.1	
Family Income			No
Under \$30,000	24.2	17.6	
\$30,000 – \$49,999	29.7	27.1	
\$50,000 – \$69,999	19.0	20.3	
\$70,000 – \$99,999	16.6	17.1	
\$100,000 or more	10.5	17.6	
Number of Children	1.94 (1.2)	1.57 (.79)	Yes
Child Age	9.65 (4.5)	9.44 (4.3)	No
Child Gender (% Boys)	49.3	72.4	Yes

Note: H.S. = High School

Table 2

Reliability coefficients by parent gender at baseline assessment.

Measures	Mothers			Fathers		
	M (SD)	Omega	95% CI	M (SD)	Omega	95% CI
Child Internalizing	1.57 (2.08)	.81	[.76 to .85]	1.30 (1.86)	.79	[.70 to .85]
Child Externalizing	2.02 (2.55)	.85	[.82 to .88]	1.84 (2.37)	.83	[.78 to .88]
Coparenting Conflict	9.57 (4.42)	.88	[.84 to .91]	10.03 (5.48)	.92	[.89 to .95]
Negative Parenting	10.74 (3.2) ^a	.86	[.82 to .87]	10.05 (3.2) ^b	.84	[.80 to .88]

Note: different superscript indicates significant differences at $p < .05$.